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EXPLANATION OF PLATE IV.

Fig. 1. Part of the ovule and conducting tissue of *Phytolacca decandra*. *a*. Conducting tissue. *b*. Pollen tube. *c*. Embryo. *d*. Embryo-sac. *e*. Nucleus. *f*. Secundine. *g*. Primine. (Schleiden.)

Fig. 2. The extremity of the pollen tube (embryo) indenting the embryo-sac. *a*. Pollen tube. *b*. Embryo. *c*. Embryo-sac. (Schleiden.)

Fig. 3. The inferior part of an ovule of *Carduus nutans*, after impregnation. *a*. Pollen tube. *b*. Embryo. *c*. Embryo-sac. *d*. Nucleus. *e*. Teguments. (Schleiden.)

Fig. 4. Section of the ovarium of *Zea Mays* at an early period of its development. *a*. Primine. *b*. Secundine. *c*. Nucleus. *d*. The little cavity in which the primary utricle is afterwards formed. (Mirbel and Spach.)

Fig. 5. The same at a more advanced period. *a*. The primary utricle. (Mirbel and Spach.)

Fig. 6. The primary utricle, detached from the ovule, filled with the globulo-cellular cambium. (Mirbel and Spach.)

Fig. 7. The embryo detached. *a*. Cotyledon. *b*. The first leaf of the plumule. *c*. The second leaf of the plumule. (Mirbel and Spach.)

Fig. 8. The embryo at a more advanced period. *a*. The first leaf of the plumule. *b*. Radicle. *c*. The suspensor. (Mirbel and Spach.)

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I follow therefore in general the well sustained view of Deshayes, who reunites the genera *Achatina* and *Bulimus* of Lamarck, and shows on anatomical grounds (Lam. viii. p. 14. 2de édit.) that they cannot be comprised under *Helix*; but I cannot at all agree in the opinion expressed by the same ingenious naturalist, that *Clausilia* and *Pupa* must likewise be combined. I find, rather, no reason for separating Draparnaud's genus *Pupa* from *Bulimus*. In the European species described by Draparnaud, there were, it is true, some constant characteristics evident which appeared to justify this separation; but with how many species have we since then become acquainted, which have shown the earlier generic characters to be insufficient, and have therefore been sometimes ascribed to the one, sometimes to the other of these genera! In fact, I know at present not a single distinctive character between the two. The animals are perfectly identical; the form is in both cylindrical or ovate; and the oral edge disconnected. What therefore is left? The form of the aperture, or its folds and teeth? The form of the columella? For all these characteristics the most distinct forms of transition are afforded by Férussac's genus *Partula* or Swainson's *Achatinella*. Are the teeth and folds of the aperture to constitute the chief character,—which for instance Menke seems to adopt, since he refers to the *Pupæ*, the long-known *Bulimus Pupa*? But how many toothed species do we not now refer without scruple to *Bulimus*, following the analogy with *Helix*, while at the same time we do not class, for instance, *Pupa obtusa* among them! In the ex-

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and Deshayes' species, Nos. 2, 9, 40, 41, 42, 43. But since all these, on account of the regularly continuous peristoma, can be classed with none of the other genera of the family *Helicidæ*, and on account of the structure of the animal can far less be referred anywhere else, I conceive that they form of themselves a good genus, and propose for this the name *Cylindrella*,—a name which in the first place points to the form of all the species known, modified by the termination already in use in molluscous genera.

The characteristic of this new genus would be as follows:—

Cylindrella, *L. Pfr.*—Animal heliciforme. Testa subcylindracea, imperforata, multispirata, sæpe truncata. Peristoma continuum, suborbiculare. Operculum vel clausium nullum.

All hitherto known species are inhabitants of the West Indian Islands, and I myself have found in Cuba four evidently distinct species, of which two have already been described and figured by Férussac (*Helix Cochlodina perplicata* and *subula*), the two others are perhaps new. The latter have been preliminarily described by me in Wiegmann's Archiv (1839, p. 353.) under the name *Clausilia elegans* and *crispula*. It appears remarkable to me that all the Cuban *Cyclostomata* with which I am acquainted are always truncate, i. e. cast off the apex at a certain age, and reclose the open place. Almost all known species are dextral, and we should be justified in adopting this as a generic character if Chemnitz's *Turbo elongatus* from Jamaica (*Clausilia Chemnitziana*, Desh.) was not sinistrously whorled, according to the figure and clear description. (Chemn. ix. fig. 956.) In other respects this species is so nearly allied to my *Cyl. elegans* in its habit, that we may admit with certainty that it likewise has no clausium, and belongs to the new genus, of which the following are the hitherto known species:—

1. *Cylindrella gracilicollis* (Clausilia truncatula, *Lam.* 2.)
2. ——— *collaris* (Claus. collaris, *Lam.* 9.)
3. ——— *antiperversa* (Claus. antiperversa, *Desh.* 40.)
4. ——— *subula* (Claus. subula, *Desh.* 41.)
5. ——— *perplicata* (Claus. perplicata, *Desh.* 42.)
6. ——— *Chemnitziana* (Claus. Chemnitziana, *Desh.* 43.)

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Cylindrella, *L. Pfr.*—Animal heliciforme. Testa subcylindracea, imperforata, multispirata, sæpe truncata. Peristoma continuum, suborbiculare. Operculum vel clausium nullum.

All hitherto known species are inhabitants of the West Indian Islands, and I myself have found in Cuba four evidently distinct species, of which two have already been described and figured by Férussac (*Helix Cochlodina perplicata* and *subula*), the two others are perhaps new. The latter have been preliminarily described by me in Wiegmann's Archiv (1839, p. 353.) under the name *Clausilia elegans* and *crispula*. It appears remarkable to me that all the Cuban *Cyclostomata* with which I am acquainted are always truncate, i. e. cast off the apex at a certain age, and reclose the open place. Almost all known species are dextral, and we should be justified in adopting this as a generic character if Chemnitz's *Turbo elongatus* from Jamaica (*Clausilia Chemnitziana*, Desh.) was not sinistrously whorled, according to the figure and clear description. (Chemn. ix. fig. 956.) In other respects this species is so nearly allied to my *Cyl. elegans* in its habit, that we may admit with certainty that it likewise has no clausium, and belongs to the new genus, of which the following are the hitherto known species:—

1. *Cylindrella gracilicollis* (Clausilia truncatula, *Lam.* 2.)
2. ——— *collaris* (Claus. collaris, *Lam.* 9.)
3. ——— *antiperversa* (Claus. antiperversa, *Desh.* 40.)
4. ——— *subula* (Claus. subula, *Desh.* 41.)
5. ——— *perplicata* (Claus. perplicata, *Desh.* 42.)
6. ——— *Chemnitziana* (Claus. Chemnitziana, *Desh.* 43.)

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8. ———— *crispula* } Archiv, Part I. 1839, p. 353.
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The first five of these species are figured by Férussac on the 163rd plate, and are referred by him to the subgenus *Cochlodina*. Rossmässler calls them, ('Iconographie', Part II. p. 13.) "long-necked *Pupæ*," under which Sowerby ('Genera of Shells,') also classes some species belonging here. Whether *Clausilia torticollis*, Lam. from Candia, must likewise be referred to *Clausilia* I will not venture to determine, as I am not acquainted with the species, nor is the figure at present at my disposal, and the description is slight, especially with reference to the aperture. Yet much speaks in favour of this being its true position.

From what has been above stated it appears to me advantageous to divide the family of the *Helicidæ* into the following genera:—

1. *Vitrina*.
2. *Helicophanta*.
3. *Succinea*.
4. *Helix* (with *Carocolla* and *Anostoma*, Lam.)
5. *Bulimus* (with *Achatina*, Lam., *Pupa*, Drap., *Partula*, Fér., and *Megaspira*, Lea.)
6. *Vertigo*.
7. *Cylindrella*.
8. *Clausilium*.
9. *Polyphemus*, Mont.

The character which all have in common with the *Limacidæ*, and by which they are distinguished from the following orders, are the retractile tentacles provided at the apex with eyes; and the separate genera appear to me only in this way capable of being sufficiently established according to correct principles. Perhaps, however, some changes must be made in accordance with the structure of the animals, as I am chiefly led to suppose from some observations made on living specimens of *Bulimus hæmastomus*.

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